HAFNER

PNEUMATIC SOLUTIONS FOR PAPER MILLS

Products for the pulp and paper industry must be able to withstand the often hot and dirty ambient conditions. Robust products with a high level of IP protection are particularly important here.

HAFNER not only offers high-temperature valves in IP67, but also smart components for Paper Mill 4.0.

- ✓ Ready-to-use control cabinets
- ✓ Base plates with individual shut-off screw
- ✓ Temperature range up to +120°C
- ✓ Robust design
- ✓ Solenoid coils with M12 connection
- ✓ Valves with position feedback sensor
- ✓ Products made of stainless steel or aluminum EMATAL

HAFNER Pneumatik Krämer GmbH & Co. KG, Stammheimerstraße 10, D – 70806 Kornwestheim
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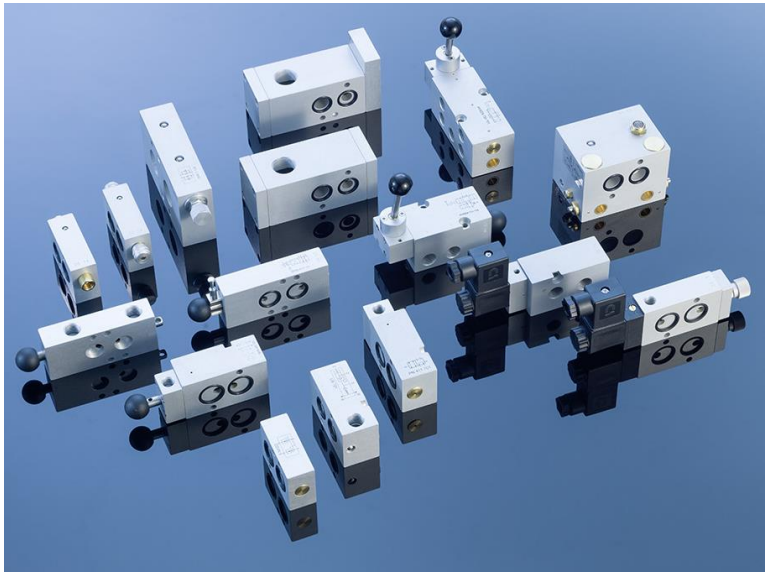
Process valve automation with NAMUR-valves.

Pneumatically actuated, automated process valves are controlled in stock preparation either by valves in control cabinets or via flanged valves with a NAMUR-interface.

We offer a unique NAMUR-valve range on the market..

3- and 5-way valves with NAMU-interface.
Also available with M12 connection on the solenoid coil.



- Flow regulator plates
- Quick-exhaust blocks
- Block- and vent valves
- Fail-safe and fail-freeze valves
- Exhaust-air recirculation block for spring-return actuators
- Accessory valves for positioners

Our NAMUR valves are available with the NAMUR 1 (1/4") and NAMUR 2 (1/2") interface.

The ambient air in paper mills is often wet and dirty. **Protecting the spring chamber** in **single-acting actuators** is therefore particularly important.

When the actuator is controlled by a 3/2-way NAMUR-valve, the exhaust-air recirculation with clean process air is ensured.

The situation is different when the actuator is controlled by a remote mounted valve e.g. in a control cabinet. In this case, the spring chamber is often protected by a silencer. However, the silencer only keeps larger particles away from the spring chamber.

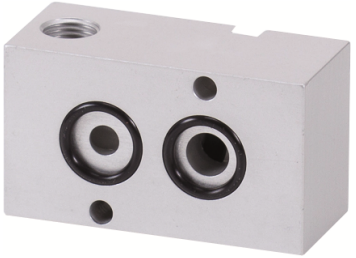
We have therefore developed the NAMUR air recirculation block, which ensures that only process air enters the spring chamber during the switching process.

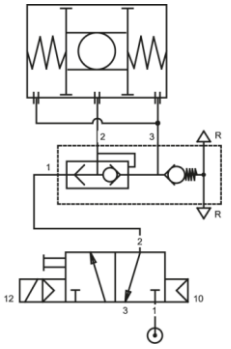


Broken springs in single-acting actuators in a paper mill.

Air-recirculation block type UB 701

The air-recirculation block protects the spring chamber of single-acting actuators from the ambient air.





Single-acting actuator

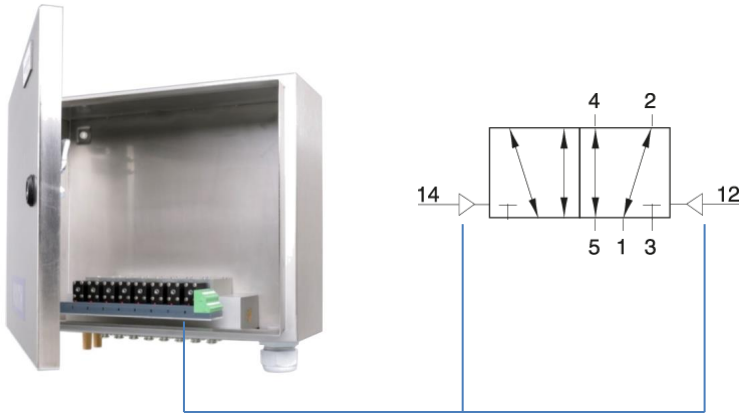
Air-recirculation block

3/2-way valve

Process valves with large actuators require a lot of air. When actuating from a control cabinet, the air volume may not be sufficient under certain circumstances.

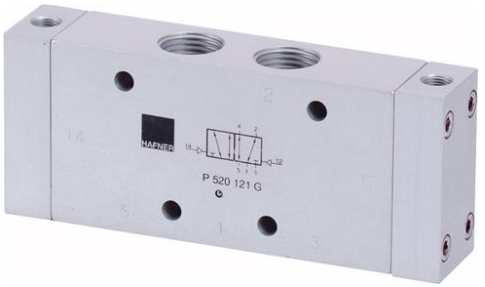
The solution: our booster valves with a flow rate of up to 6,000 Nl/min in the largest version with G 3/4" ports.

The booster valves are installed close to the actuator and can be controlled by the two pilot ports 12 and 14.

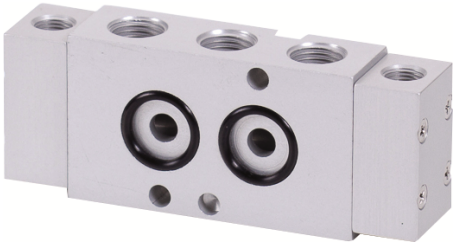


Booster-valves type P 520 ...

Double-pilot pneumatic valves with ports G 1/2“ (3.000 Nl/min) or G 3/4“ (6.000 Nl/min).



Also available with interface according to NAMUR 1 (1/4“) and NAMUR 2 (1/2“).



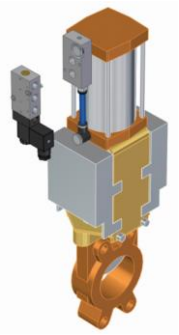
In comparison to most quarter-turn actuators, linear actuators and scotch-yoke actuators do usually not offer a NAMUR-interface for the control valve.

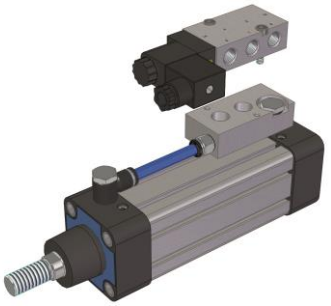
We therefore offer cylinder-valve combinations plates to assemble a NAMUR-valve and any other NAMUR-accessory directly to these actuators.

The use of cylinder-valve combinations offers numerous advantages:

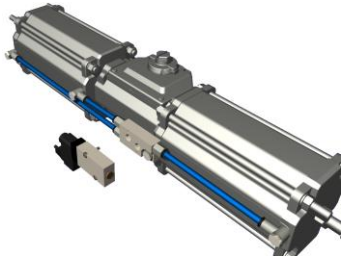
- Standardized NAMUR interface
- Quick & easy installation
- Easy to maintain
- Use of additional NAMUR accessories possible
- Minimal air consumption
- Fast response time of the actuator

Plates for linear cylinders type ZVP





Plates for scotch-yoke actuators type ZVPS



The plates can be used on actuators with only one, but also with two cylinders.

Control of process valves with solenoid valve cabinets.

Traditionally, process valves are controlled from control cabinets by 5/2-way solenoid valves.

Together with a customer, we have defined a standard cabinet to keep costs low and increase availability.

- Measurements 400x280x155 mm
- Protection IP 66
- Stainless steel 1.4301 (AISI 304)

Thanks to the special manifold plate with all connections "downwards", all pneumatic connections are outside the cabinet.
This results in numerous advantages.

- ✓ Compact and economical design
- ✓ Less installation effort
- ✓ Reduced risk of leakage
- ✓ No additional fitting connections
- ✓ No additional electrical box required in the cabinet

8 x 5/2-way solenoid valves

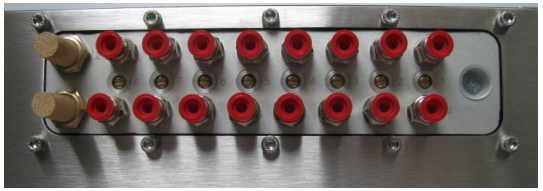
1.8 Watt power consumption

Orifice size 7 mm

1,250 l/min flow rate per valve

No common minus

16 poles on the terminal.

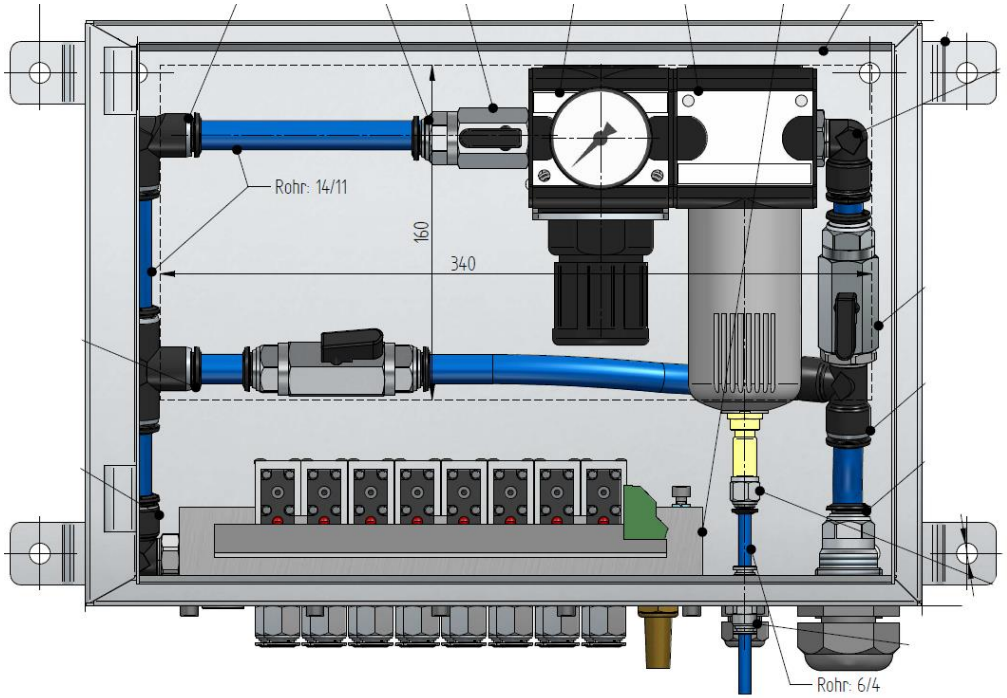


Individual shut-off screw in the manifold, allowing individual valves to be replaced without affecting the other valves.

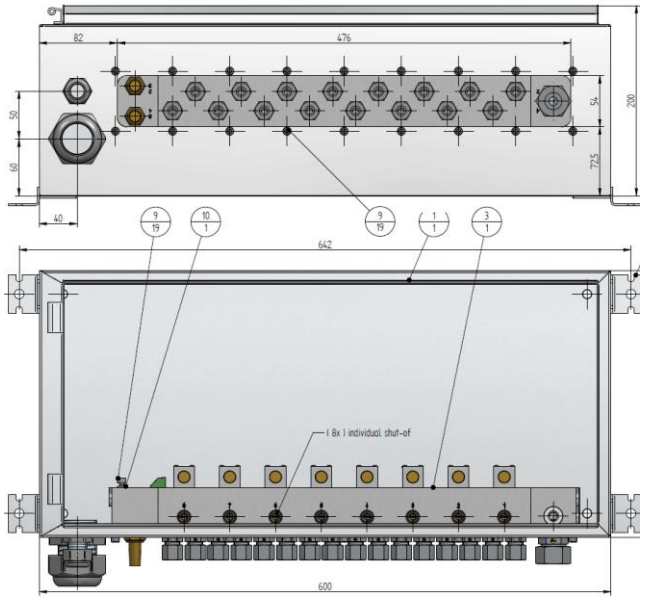
Electrical connection board + and - for each solenoid (terminal clamp)

Control of process valves with solenoid valve cabinets.

The solenoid valve cabinet is also available with an integrated filter regulator including bypass function…

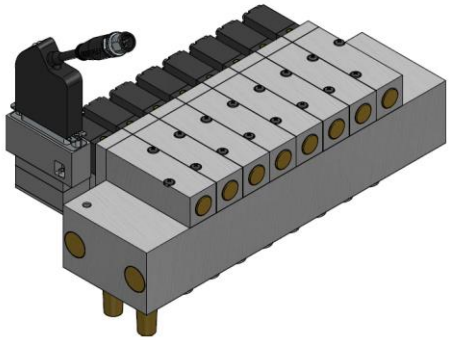


… as well as on request with cutting ring fittings for 10 mm pipe.

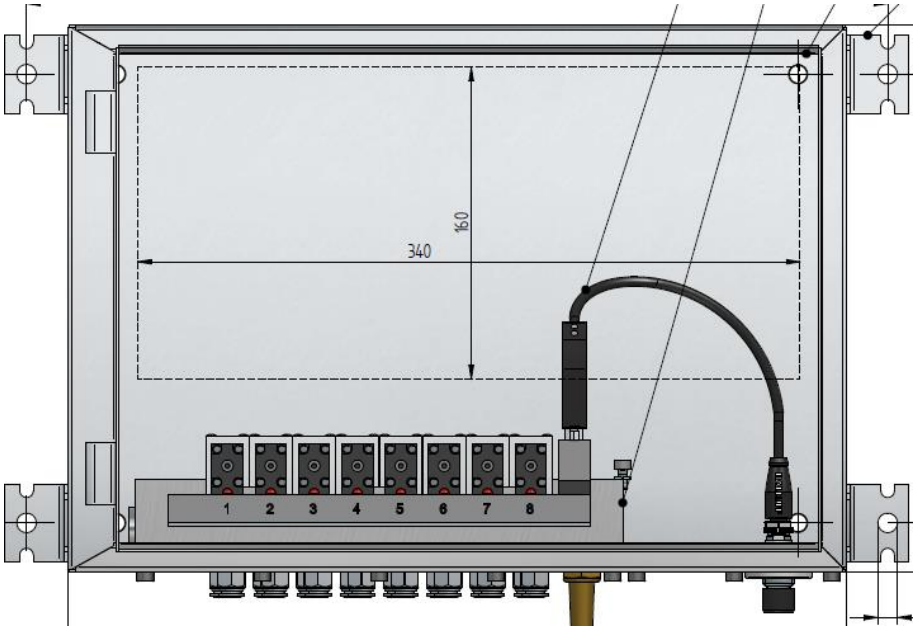


The condensate from the automatic condensate drain is discharged outside at the bottom of the cabinet.

For the Paper Mill 4.0 we have developed a valve terminal with IO-link connection.



Valve terminal with Balluff IO-link connector.



Alternatively, valve terminals with fieldbus protocols are available as well.

- EtherCAT
- PROFINET
- Modbus/TCP
- Ethernet/IP

Air distribution boxes for the decentralized supply of compressed air.

As with the solenoid valve cabinets, we use the standardized control cabinet also for the air distribution boxes.

The control cabinet has a G 3/8" air supply port and distributes this to up to 12 process valves.

The inlet air can be opened and interrupted by the main shut off-valve.

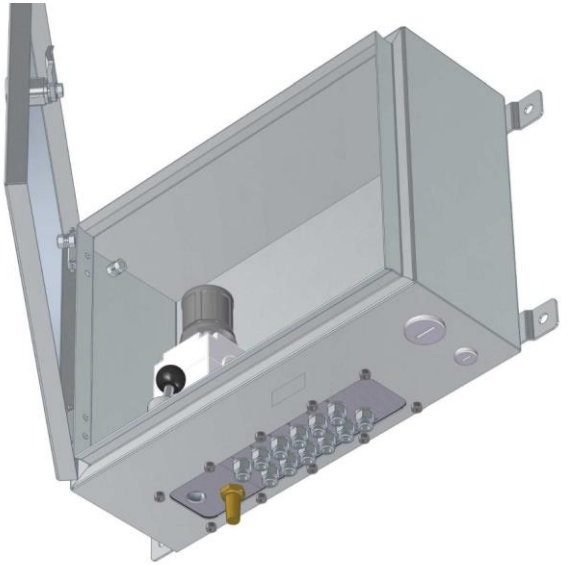
In addition, each outlet connection has an individual shut-off screw in the plate (inside the box) to allow the compressed air to be shut off individually.

12 connections

3/2-way main shut off-off valve

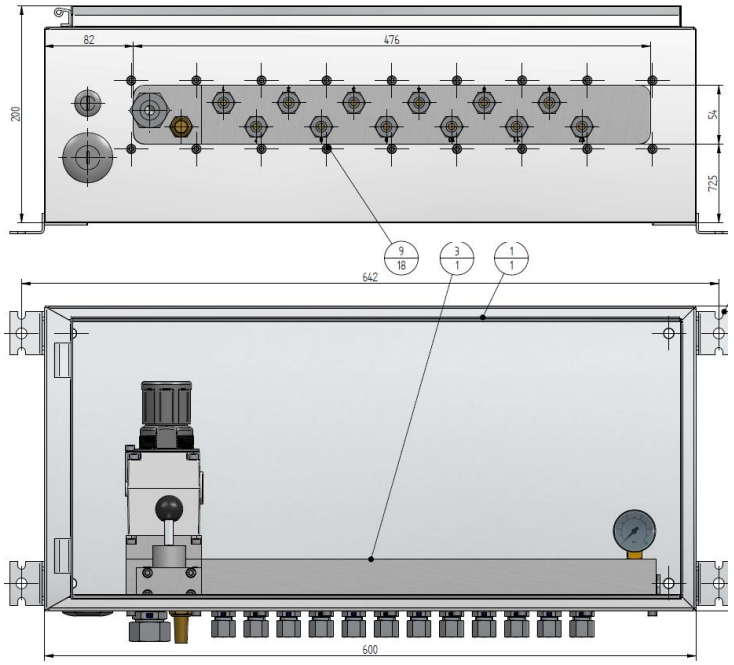
Pressure regulator with gauge

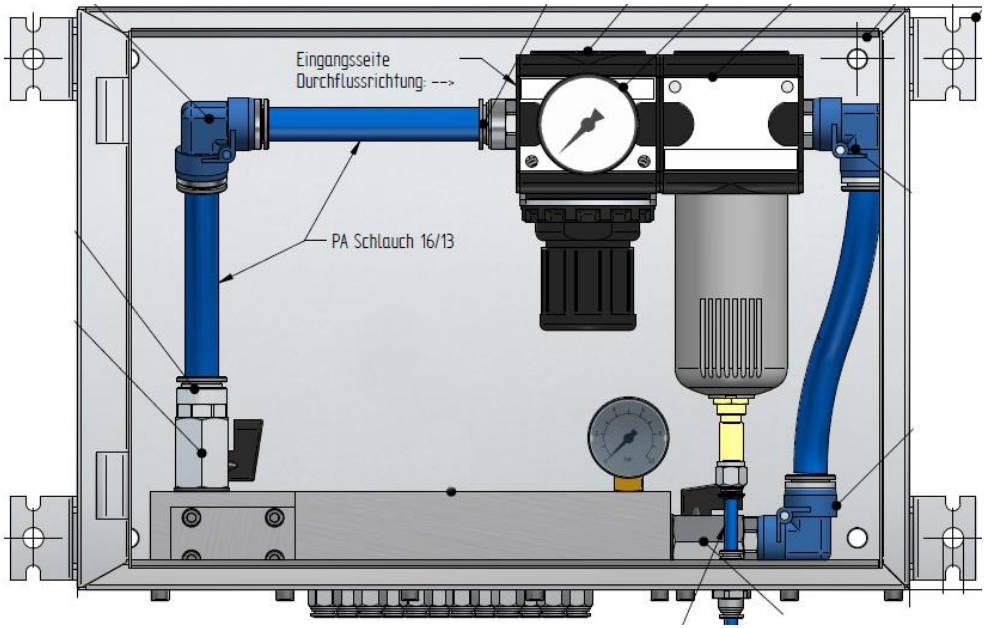
Individual shut-off screws



The air distributor cabinet is also available with an integrated filter regulator including bypass function…

… as well as on request with cutting ring fittings for 10 mm pipe.



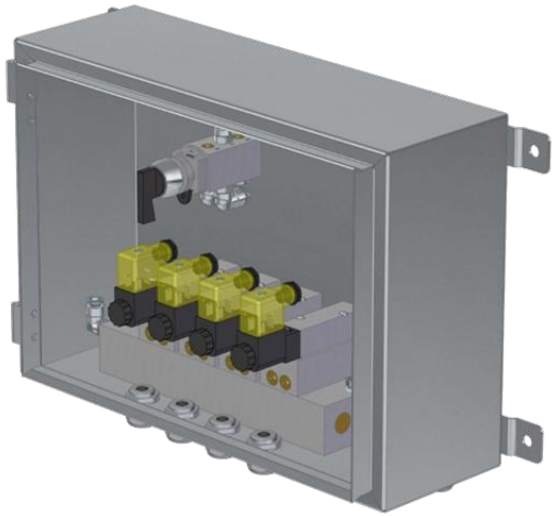


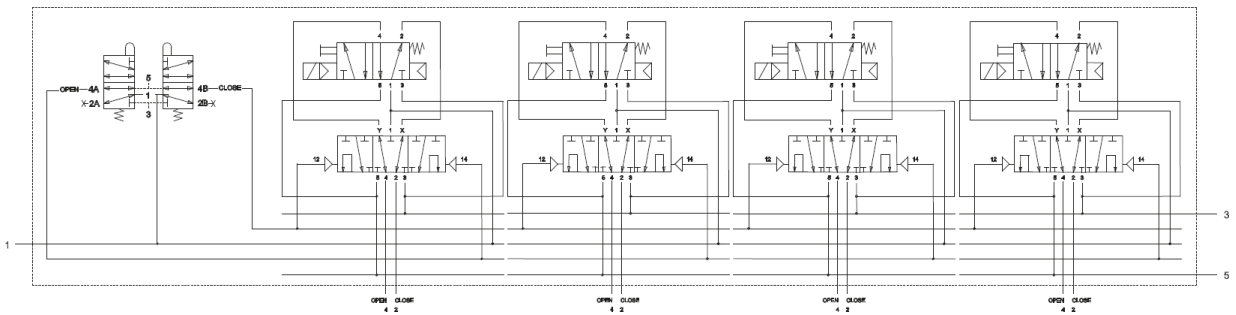
The condensate from the automatic condensate drain is discharged outside at the bottom of the cabinet.

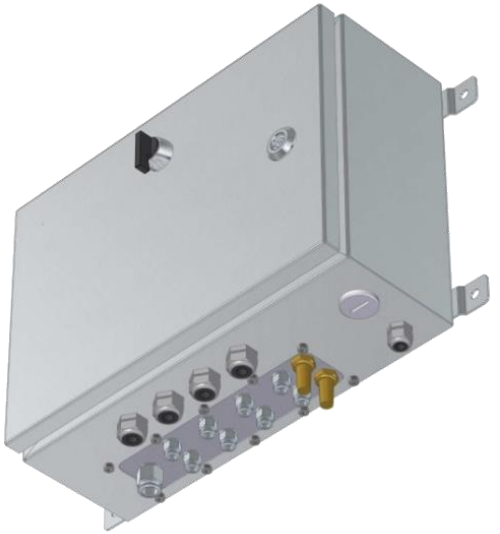
Control cabinet with manual emergency actuation for the „Junkomat“.

The Junkomat control cabinet can be used to control up to four process valves by 5/2-way solenoid valves.

In an emergency, all four solenoid valves can be overrode simultaneously by a lever switch in the cabinet door.







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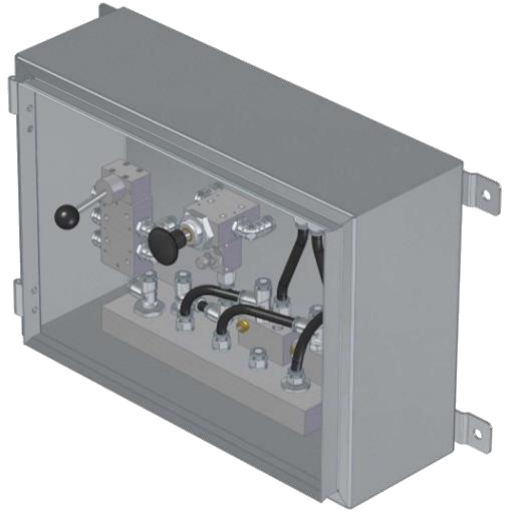
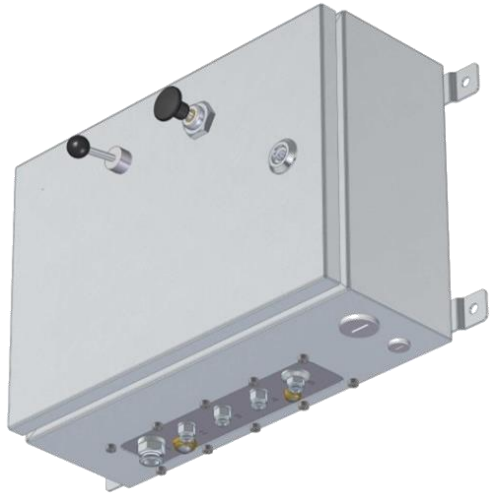
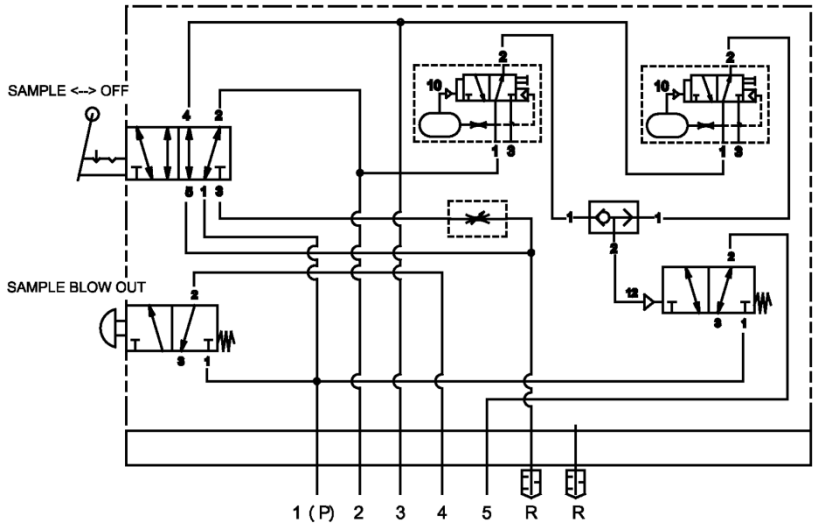
Control cabinet with automatic blow-out air pulse for controlling sampling valves.

The sample taking control cabinet was designed to operate sampling valves. Samples can be taken by the hand lever in the cabinet door and are automatically blown out with air after a predefined time.

Additional air pulses are possible at any time by the push-button valve.







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Sample flush unit: Valve to control a sample taking valve with flushing device.

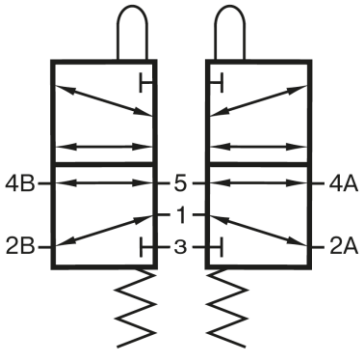
Valve to control a sample taking valve with flushing device.

In the middle position "OFF", the sample taking valve and the flushing device are closed.

The sample taking valve is opened by moving the lever to the "SAMPLE" position.

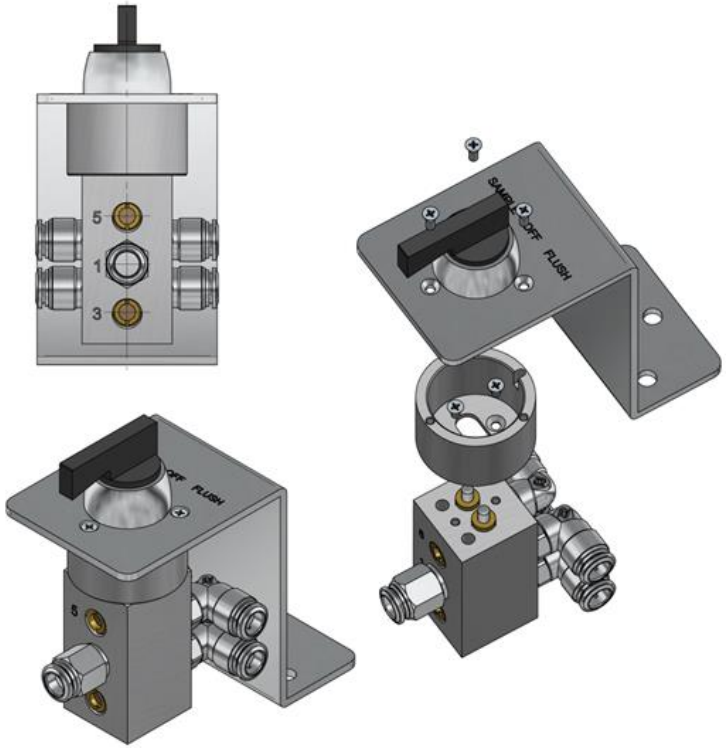
The sampling valve is flushed out by moving the lever to the "FLUSH" position.

The 3-position switch ensures that the sampling valve cannot be opened and flushed at the same time.



7/3-way valve type BA 730 301

Two independently working 5/2-way valves with a 3-position selector switch

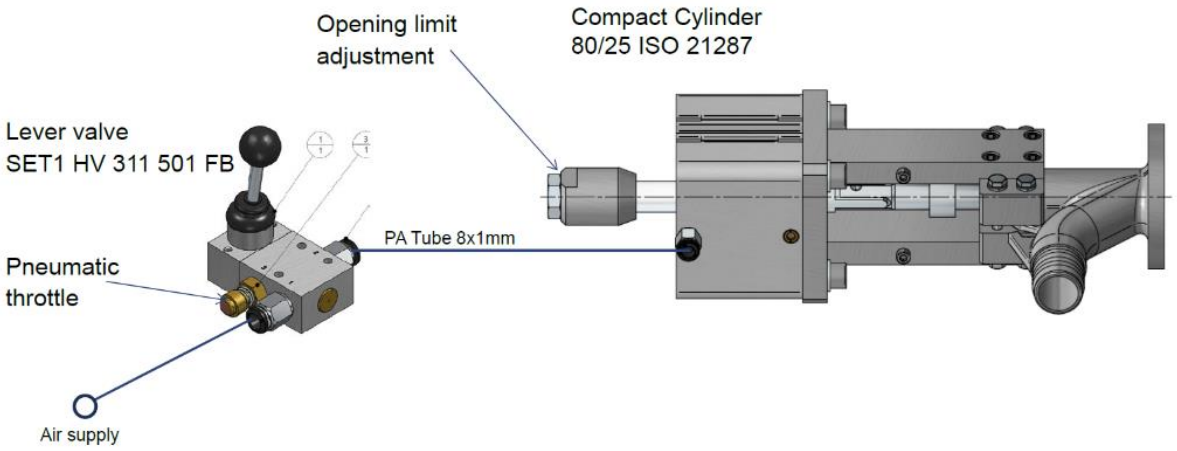


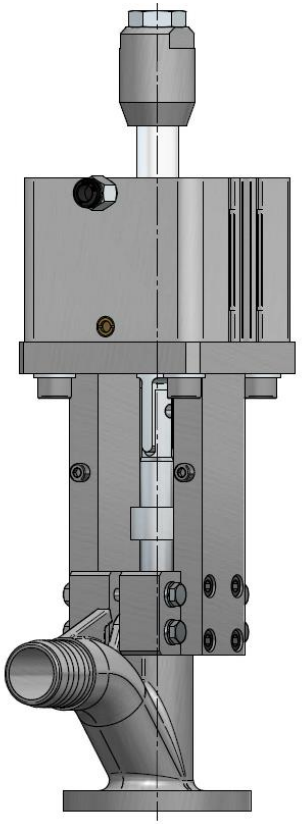
We can also offer complete sets consisting of a cylinder and hand-lever valve for the pneumatic automation of sample taking valves.

Sample taking valves are often operated manually using a lever.

Pneumatic automation can be useful for high pressures or areas that are difficult for employees to access.

For this purpose, we offer kits consisting of a double-acting compact cylinder and a 3/2-way hand lever valve. The compact cylinder can be equipped with a stroke limitation.

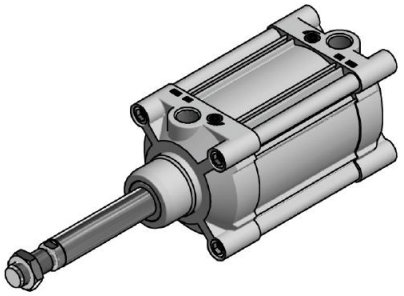


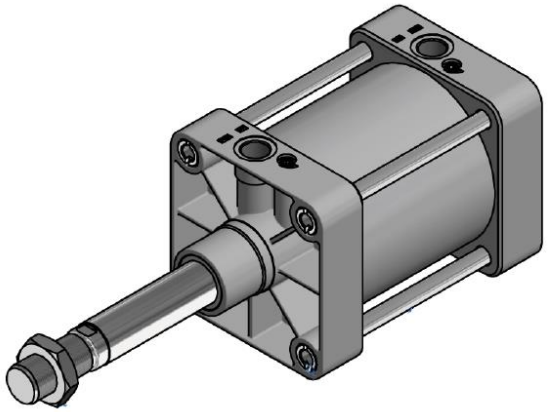


ISO cylinder to actuate a floor drain valve.

Double-acting ISO cylinders for the automation of floor drain valves / opening of the drain.

- Piston-Ø 100 mm and 160 mm (others on request)
- With anti-rotation lock for the piston rod
- Piston rod and screws made of AISI304
- With metal wiper
- With piston rod extension
- Adjustable cushioning

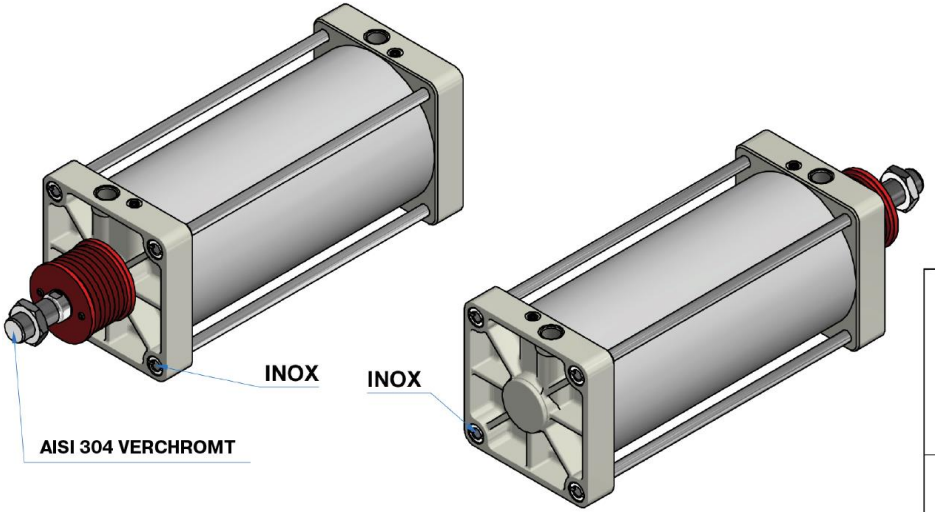


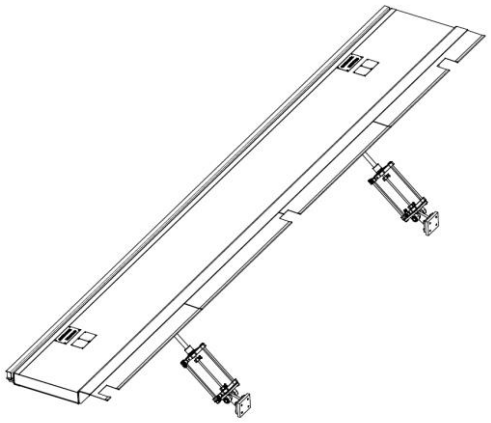


Customized cylinder to actuate a pneumatic flap in the "Rewinder reject pulper" area.

Double-acting ISO 15552 tie rod cylinder to actuate a flap.

- Piston-ø 250 mm
- Stroke 450 mm
- With magnetic piston
- Adjustable cushioning
- Piston rod made of AISI 304 stainless steel
- Tie-rods and nut made of stainless steel
- With scraper and bellow





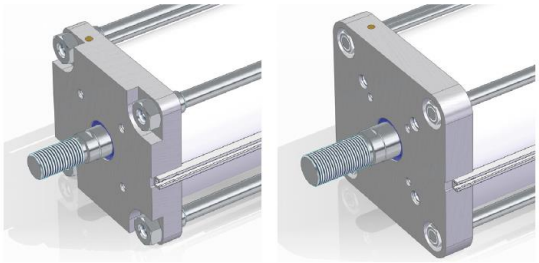
Particularly robust linear actuator series with integrated NAMUR-interface for the automation of knife gate valves.

The conditions in junk traps are challenging. The knife gate valves operate frequently and the environment is wet and dirty.

We have developed a particularly robust cylinder series for this application, which has an integrated NAMUR-interface in the cylinder cap to assemble the control valve.

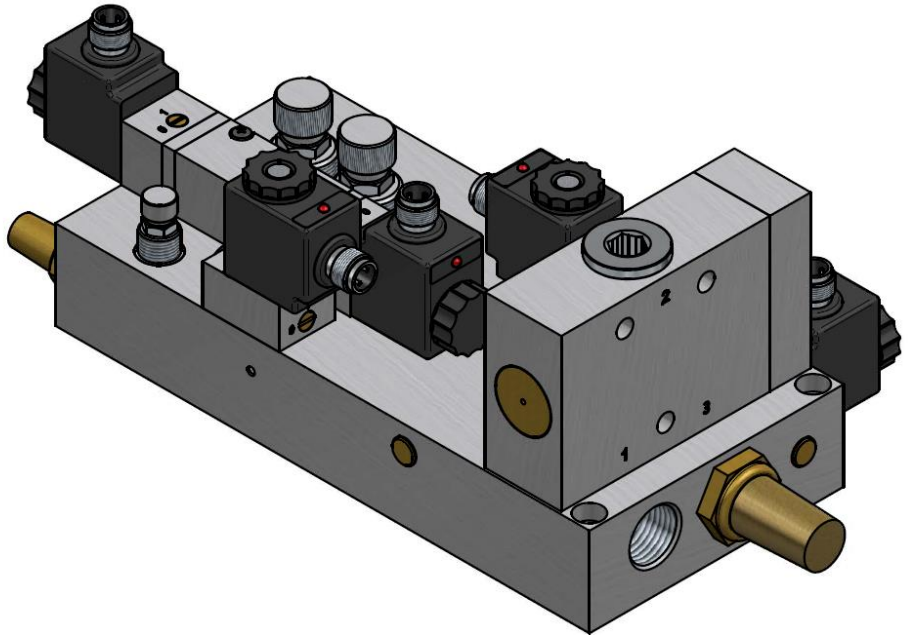
- Double acting
- Cushioning by integrated cushioning rings
- Design similar to ISO 15552
- All cylinders with magnetic piston as standard

The connection interface on the cylinder head is in accordance with DIN 3358/ISO 5210 for direct mounting on gate valves.



Valve block to provide the pulp with a constant width and thickness.

The valve block offers coarse and fine control as well as an emergency exhaust function.



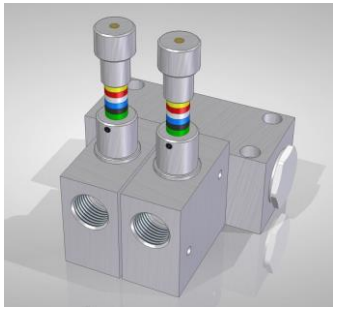
For the air blow conveyance of the paper we offer adjustable flow regulators with high air-flow rate.

Our G 3/4" block form flow regulators have been specially developed for the ropeless paper transport.

The regulators offer a flow rate of up to 6,000 Nl/min and other advantages in comparison to a ball valve solution:

- Indication of the flow setting by coloured rings, documentation of the factory setting easily possible.
- The setting is fixed with an Allen screw.
- Almost linear flow curve. Especially in the relevant range. Very fine adjustment even at high flow rates.
- Less installation material required due to manifold mounting plates & reduced piping effort
- Can be used in ambient temperatures up to +120°C

Block form flow regulators type D 181
Individual, 2-fold and 3-fold systems



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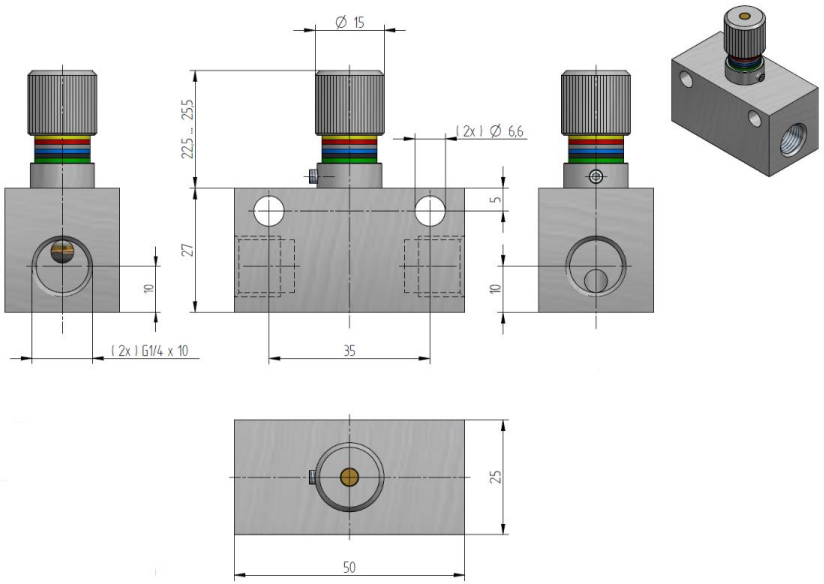
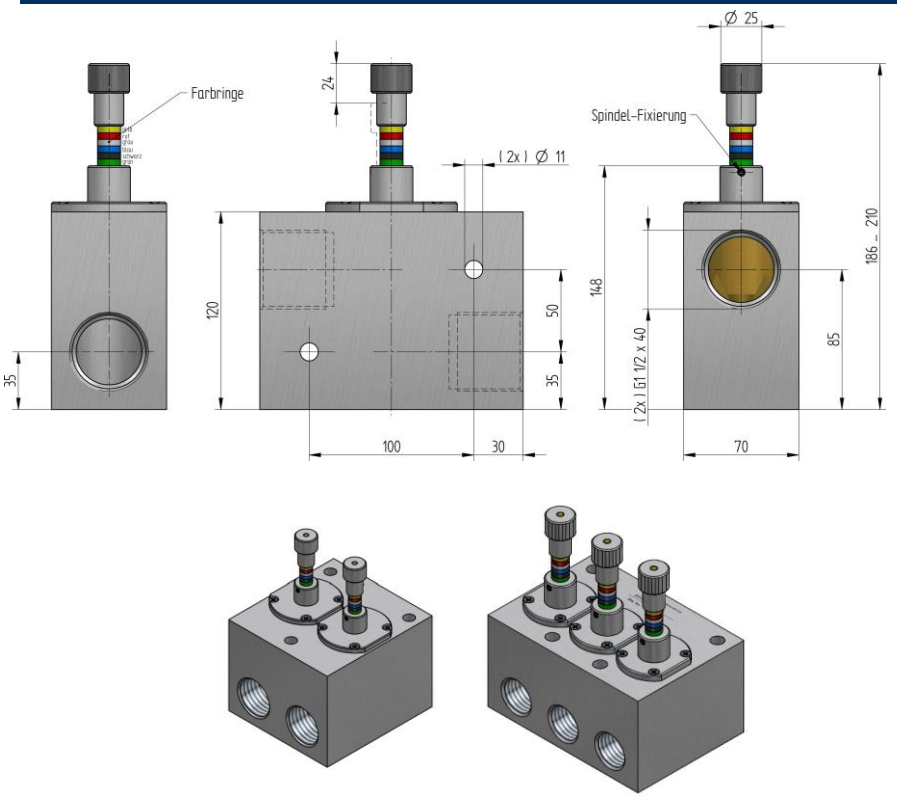
The flow regulators are also available with less or more flow rate.

For other applications, the high-temperature regulators are also available in G 1/4" and up to G 1-1/2" on request.

Flow regulators type D 501
G 1/4“ – Air-flow max. 450 Nl/min.

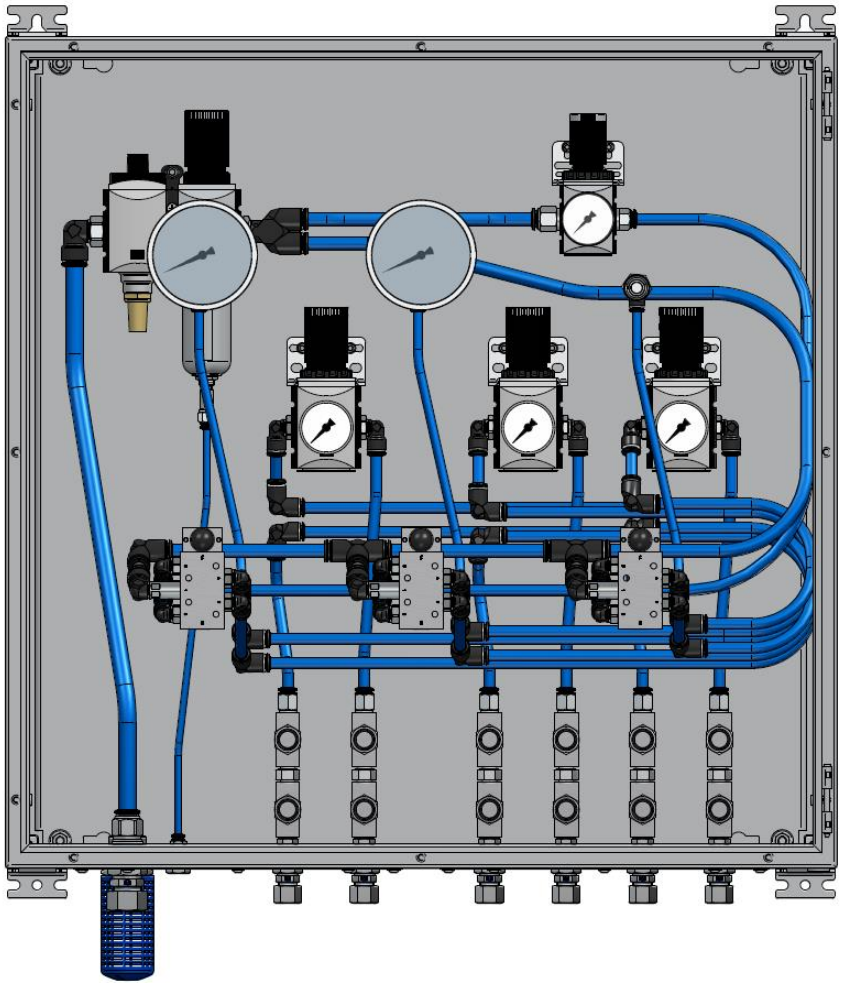


Flow regulators type D 400
G 1-1/2“ – Air-flow max. 25.000 Nl/min.



For the paper transport by rope we have developed the „rope tensioner“ cabinet.

Stainless steel control cabinet 760x760 mm consisting of a filter regulator unit, pressure regulators, hand lever valves and uni-directional flow control valves.



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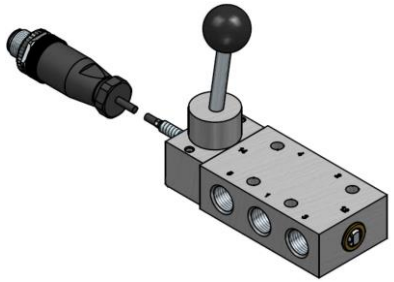
Lockable hand lever valves for safe replacement of the scraper blades.

Lockable 5/2-way hand lever valve to protect personnel when working on / replacing the scraper blades.

The valves have an extended spool which can be locked in position with a padlock.

The valve can be used in ambient temperatures up to +120°C.

The valve is also available with an inductive sensor for position feedback.

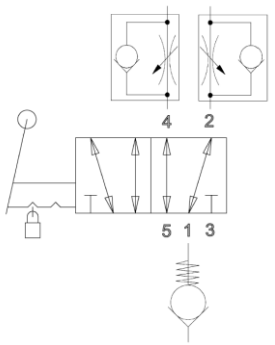


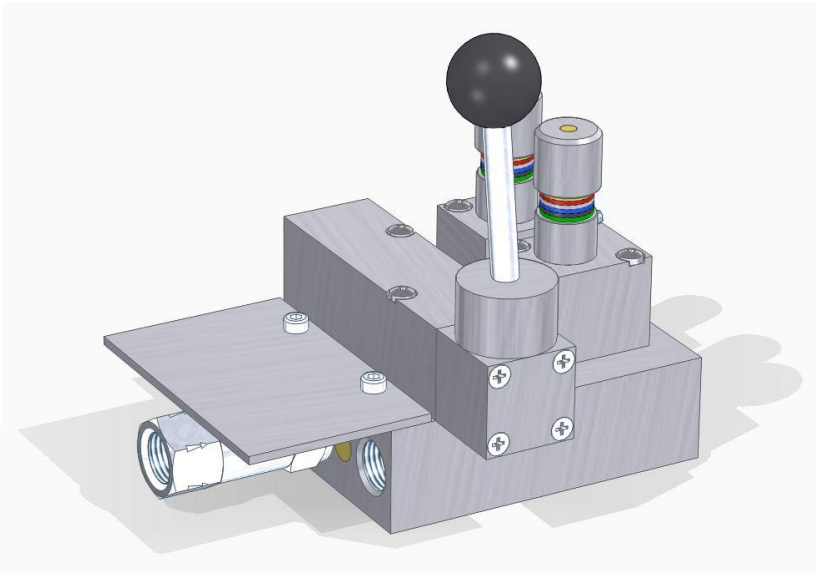
Hand-lever valve type HVR 520 701 L
Ports G 1/4“
Lockable with a padlock

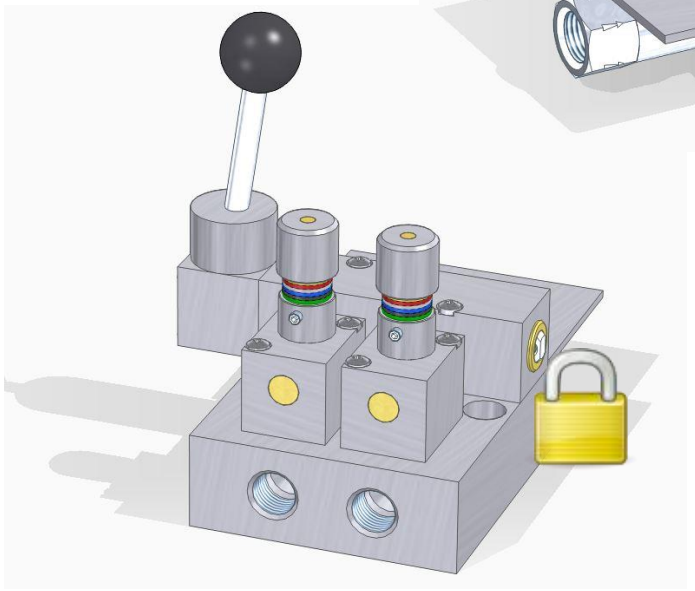
Valve block to lift the scraper blade frame.

Block consisting of two flow control valves, a lockable 5/2-way hand lever valve and a non-return fitting.

The block was developed to lift the scraper blade frame and can be used in ambient temperatures up to +120°C.







Cylinder with oscillating module to control the scraper blades.

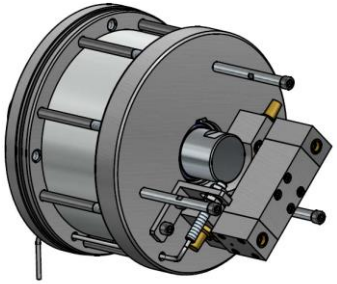
Double-acting pneumatic cylinder to continuously move the scraper blades back and forth on the rollers.
The switching takes place automatically at the end of the piston rod stroke by the oscillating module.

The oscillating speed can be adjusted by an integrated flow control valve.

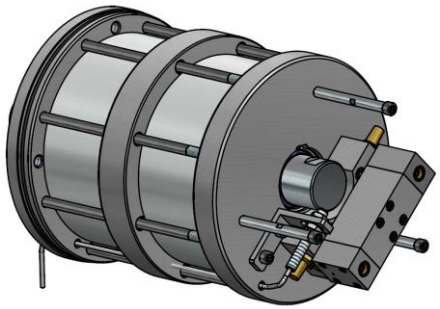
The cylinder comes with a protective cover so that it can also be used in wet areas.

- Piston-ø 160 mm
- Stroke 16 mm
- Temperature range: max. +110°C

With one piston

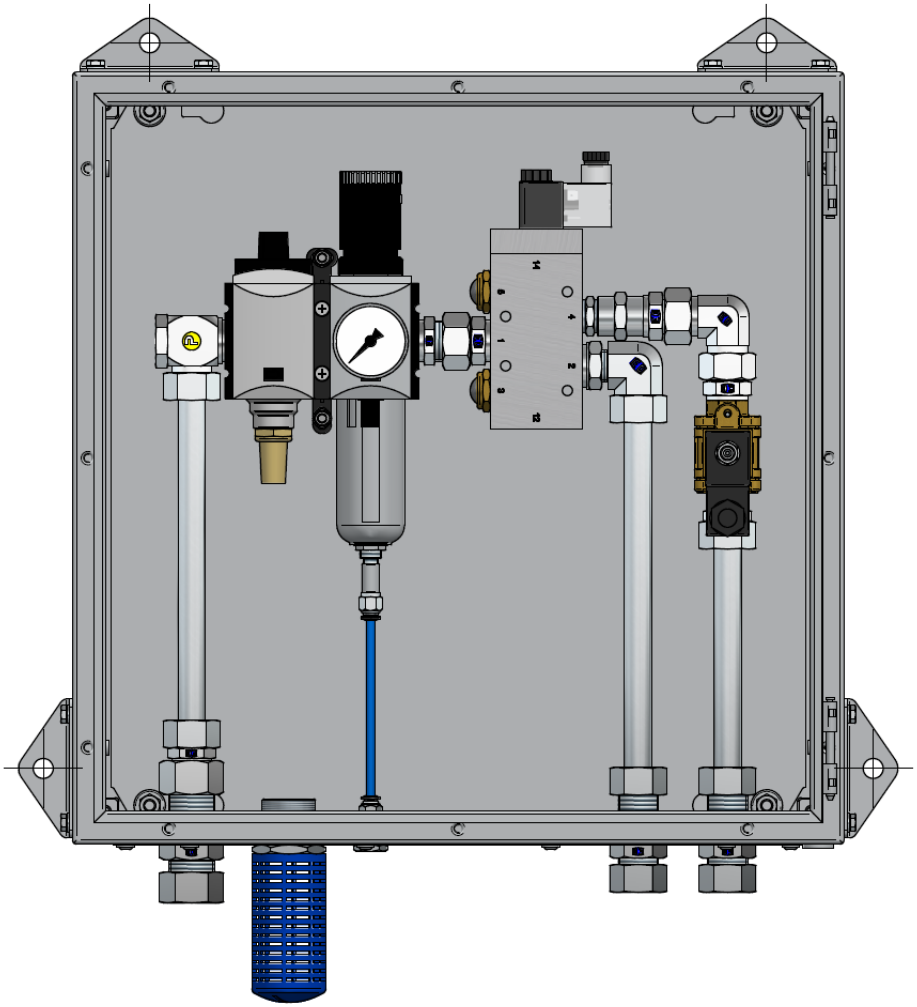


With two pistons (tandem)



We have developed the "cutter blade" control cabinet for winders.

Stainless steel control cabinet 500x500 mm consisting of a filter regulator unit with ball valve, 5/2-way solenoid valve and 2/2-way solenoid valve.



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Standard pneumatic

In addition to these special products developed for the paper industry, we also offer a complete range of pneumatic components.

Valves

- From M5 up to G 3/4“
- High-temperature versions up to +120°C
- Made from aluminum, stainless steel or EMATAL
- Valve terminals with Sub-D and field bus connections

Actuators

- According to ISO 6432, ISO 15552, ISO 21287, UNITOP
- Piston-Ø up to 320 mm
- Made from aluminum or stainless steel
- High temperature versions
- Various options such as scrapers or bellows
- Manufacturing of customized actuators

FRL-Units

- FRL-units up to G 2“
- Full metal series available
- With semi-automatic and automatic drain

Fittings & Tubes

- Push-in and cutting ring fittings
- Function fittings
- Silencers
- Tubes made of PUR, PA, PE and PTFE
- Spiral tubes

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